Solution Brief

IBM Watson Talent Frameworks for Manufacturing

Industry specific job skills for organizational success

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Stalled productivity, the digitization of operations and an abundance of open positions coupled with an aging workforce present significant workforce challenges in manufacturing today. People and skills are as critical as technological innovation in confronting these challenges. Watson Talent Frameworks for Manufacturing is designed to help you identify, leverage and develop employee skills to address a variety of obstacles such as the digitization of production lines, driving time to market and complying with accident avoidance and incident reporting measures.

Our solution supports you in attracting and quickly onboarding new robotics engineers through a detailed set of skills and abilities specific to individual roles. Retain your best safety analysts by providing clear visibility to future career opportunities, and engage existing production staff with skill-specific content to drive day-to-day performance and on-going development.

Connect People to Business

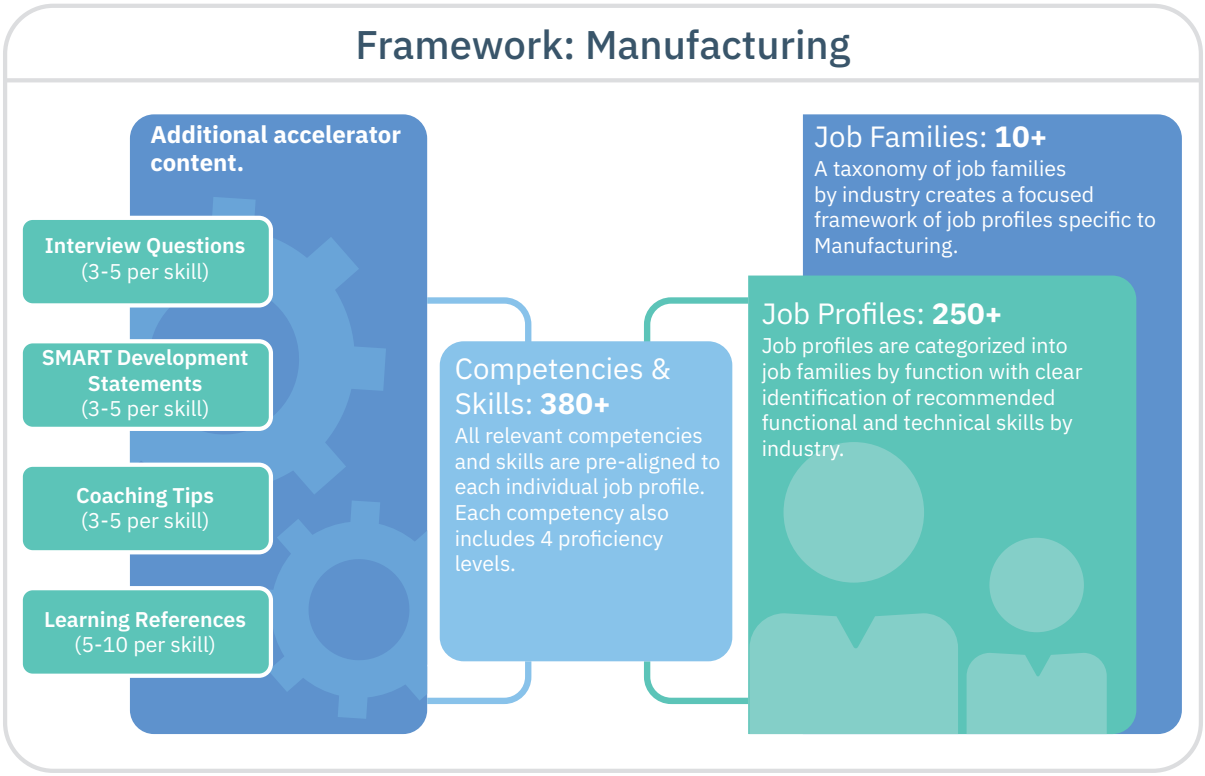
Watson Talent Frameworks for Manufacturing ensures a benchmark model to centralize and provide consistency in how you define jobs and skills across all aspects of talent management. It provides HR both data and content to match the right talent with company requirements, creating an engaging employee experience to drive better business results.

Watson Talent Frameworks includes several key elements:

- Pre-defined job profiles detail the skills and levels of proficiency employees need to excel.
- Standard job descriptions attract qualified candidates by clearly defining key responsibilities.
- Interview questions provide a guide for accurately assessing candidates.
- Job-specific skills, behaviours and coaching tips support managers in facilitating clear, objective performance reviews.
- SMART development statements give employees specialized, actionable practices to help them improve and achieve more.
- Learning References provide a path for growth and development.
- The jobs taxonomy drives engagement with clear and transparent career opportunities.

Watson Talent Frameworks powers people analytics and cognitive HR with a data rich foundation.

Fig 1: IBM Watson Talent Frameworks architecture



Deep Dive: Job Profile

Let us peruse a job profile from Watson Talent Frameworks for Manufacturing to better understand the data and content available. Consider the job profile of a 'Robotics Software Engineer' highlighted below as a sample.

Table 1. Job profile classification with descriptions.

Job Family Code	AMP
Job Family Name	Advanced Manufacturing Process
Job Family Description	The research and application of advanced technologies and methodologies, such as Intelligent manufacturing, automation, robotics, nanotechnology, to improve manufacturing process and capability.
Job Profile Code	AMP-5RSE
Job Profile	Robotics Software Engineer
Job Role Description	Assists in the design, definition, development, and test of the robotics software development; collaborates with senior engineers to ensure that internal and external clients' needs are met.
Job Band ID	5
Job Responsibility	(1) Collecting and researching data on customer experience with robotic platforms; preparing reports for management. (2) Documenting architecture specifications, software design description, verification plans, test cases, operating procedures, and safety procedures. (3) Participating in design and development of application software and algorithms for robotic platforms. (4) Utilizing appropriate tools to debug, test and maintain software and hardware systems of robotic tools; assisting in the verification and validation process.

** Each job profile is assigned a unique job code ID, mapped to a job family, and tagged to an appropriate job band.*

** Apart from descriptions of the main job family and the job role, each job profile includes four key job responsibilities.*

Table 1.1. Job band categories and descriptions for each.

Job Band ID	Job Band Name	Job Band Description
1	Executive Management	Vision, policy, strategy and direction setting; Enterprise and industry view; Driving organizational goals
2	Senior Management	Strategy formulation; Vision implementation; Operational responsibility; Cost and risk management; Enterprise view
3	Management; Senior Level Consulting	Functional, technical or process leadership; Management of multiple teams; High complexity and ambiguity; Tactical responsibilities
4	First Line Management; Senior Professional	Team or technical supervision; Expertise and experience with complex technical activities; Project management and consulting
5	Team Leadership; Technical Professional	Difficult technical tasks; Implementation experience; Self-sufficiency; Small project responsibility; Technical supervision
6	Administrator; Technician, Trainee	Routine technical or administrative tasks; Follows procedures; Operates under supervision

** Each job profile is mapped to one of six pre-defined job bands.*

Deep Dive: Competencies & Skills - Overview

Let us explore recommended competencies and skills data for the sample job profile highlighted in Table 1.

Table 2. List of all competencies recommended for Robotics Software Engineer: AMP-5RSE

Competency Code	Competency Name	Proficiency Level	Priority
B0150	Products and Services	3 - Extensive Experience	2 - Medium
B0300	Core Application Systems	3 - Extensive Experience	3 - High
B1050	Process Management	2 - Working Experience	2 - Medium
I0050	Active Learning	2 - Working Experience	3 - High
I0350	Problem Solving	2 - Working Experience	3 - High
I0480	Effective Communications	2 - Working Experience	3 - High
I0950	Teamwork	3 - Extensive Experience	2 - Medium
I0960	Accuracy and Attention to Detail	3 - Extensive Experience	3 - High
T0150	Programming	3 - Extensive Experience	3 - High
T0560	Software Installation and Support	3 - Extensive Experience	2 - Medium
T0590	Software Quality Assurance	2 - Working Experience	2 - Medium
T0975	Software Process Improvement (SPI)	2 - Working Experience	2 - Medium
TMFG0010	Manufacturing Trends & Directions	2 - Working Experience	2 - Medium
TMFG0020	Manufacturing Standards, Procedures and Policies	2 - Working Experience	3 - High
TMFG0060	Manufacturing Regulatory Environment	2 - Working Experience	2 - Medium
TMFG0070	Manufacturing Safety	2 - Working Experience	3 - High
TMFG0080	Environmental Protection	2 - Working Experience	2 - Medium
TMFG0440	Computer-Aided Design & Engineering	2 - Working Experience	3 - High
TMFG0900	Manufacturing Technologies and Systems	2 - Working Experience	2 - Medium
TMFG0950	Robotics/Computer Controlled Machinery	2 - Working Experience	3 - High
TMFG1110	Artificial Intelligence	2 - Working Experience	2 - Medium
TMFG1125	Industrial Automation/Automatic Control	2 - Working Experience	3 - High

Deep Dive: Competencies & Skills - Detail

Let us explore all the data and content available for the sample competency highlighted in Table 2.

Table 3. Competency and skill details of Robotics/Computer Controlled Machinery: TMFG0950.

Competency Code: TMFG0950	**Competency Name:** Robotics/Computer Controlled Machinery
Competency Description	Knowledge of robotics technologies and computer applications working principles and operation manuals; ability to implement and operate them in an automated manufacturing environment.
Proficiency Levels	Level 1: Basic understanding
	Level 2: Working experience
	Level 3: Extensive experience
	Level 4: Subject matter depth/breadth
Proficiency Level Behaviors	(1) Assesses tasks for automation potential; obtains information about alternative robotic solutions. (2) Assists with analyzing space and cost requirements associated with robot usage. (3) Loads different programs and new instructions. (4) Resolves common robotics problems. (5) Works with simple robots performing manufacturing process sub-functions.

** Each competency is defined by four levels of proficiency – Level 1: Basic understanding, Level 2: Working experience, Level 3: Extensive experience, Level 4: Subject matter depth/breadth*

Table 3.1. Accelerator content for each competency includes – Interview questions & SMART Development statements.

Competency Code: TMFG0950	**Competency Name:** Robotics/Computer Controlled Machinery
Interview Questions	(1) Describe your experience with robotics and computer controlled machinery. (2) Tell me about a common problem you faced in your last job with the robotics used in the manufacturing environment. How would you address this problem? (3) Tell me how you contributed to automating your organization's manufacturing environment. (4) How did your organization apply robotics to its production line? (5) Tell me about potential opportunities to leverage computer controlled machinery in your last organization.
Development Statement	(1) Create detailed quarterly reports of actual versus planned robotic technology costs for management. (2) Learn how to work with a multi-function robot this quarter to improve manufacturing processes in your area. (3) This year identify, research and recommend at least 5 potential automation tasks that could improve manufacturing operations. (4) Improve manufacturing efficiency by 20% this year by implementing robotics to automate production processes. (5) Document resolution procedures for common robotics problems to reduce manufacturing down-time by 5% this quarter.

**Accelerator content helps managers and employees engage with competency and skill data in an on-going manner.*

Table 3.2. Accelerator content for each competency also includes – Coaching tips & Learning references.

Competency Code: TMFG0950	**Competency Name:** Robotics/Computer Controlled Machinery
Coaching Tip Descriptions	(1) Study how robotics or computer controlled machinery helped improve production in one area of the plant. How can this success be translated into another area of the plant? (2) Establish long-range plans for automating most of the production environment using robots or computer controlled machinery. (3) How can you use robotics to automate some of your plant duties to boost your productivity? (4) Meet with robotics/computer controlled machinery experts to discuss the goals of the organization. Ask for feedback on how processes could be automated. (3) Document quality standards for individual products or components. Ensure that anything produced using robotics or computer-controlled machinery meets these standards.

Learning References

Learning Reference Type	Activities On & Off the job	Activities On & Off the job	Books	Organizations, Associations	Training Programs	Vendors
Learning Reference Name	Participate on Evaluation/ Selection Project	Consult with Subject-Matter Expert	World Robotics: Statistics, Market Analysis, Case Studies and Profitability of Robot Investment	Institute of Industrial Engineers	Robotics Institute of Carnegie Mellon University	Manufacturing Systems
Learning References Description	Ask to be part of a product, service or vendor selection. Review decision-making process, events and considerations.	Identify an individual with expertise in a particular area of interest. Make sure this person can spend time with you. Develop specific questions that will give you the appropriate information.	A yearbook that presents comprehensive global statistics on industrial and service robots is colorfully illustrated.	Professional membership society dedicated to the support of the industrial engineering profession and individuals involved with improving quality and productivity.	The Robotics Institute is part of the School of Computer Science of Carnegie Mellon University, which provides robotics courses.	A resource for tracking down information about information technology and software vendors for manufacturing.
Author			United Nations			
Publisher			United Nations Publications			
Publication Year			2005			
Provider			Amazon			
URL					http://www.ri.cmu.edu/ri_static_content.html?menu_id=276	
ISBN_ASIN			ISBN-13: 978-9211011005	www.iienet.org/		

Keeping it Current

Watson Talent Frameworks is developed by a dedicated team using an independent research methodology and augmented by Watson. IBM applies machine learning to analyze and synthesize daily feeds of job board data. Watson identifies new or updated content which is then further refined by the IBM content curation team.

As part of the process, every framework goes through a comprehensive review to identify changes relevant to industry trends. These changes are validated to ensure that the job architecture is up to date with current skill demands in the industry.

Sources include:

- Career and recruiting websites
- Client surveys and content workshops
- Disruptive industry changes
- New disciplines, job functions, job roles, or skills in technology or new industries
- Organizational development and HR best practices
- Regulatory legislation and industry compliance requirements
- Research organizations and professional associations
- Vision and thought leading vertical experts

For additional information

To learn more about IBM talent management solutions,
Visit: www. afmtalentmanagement.co.uk/
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